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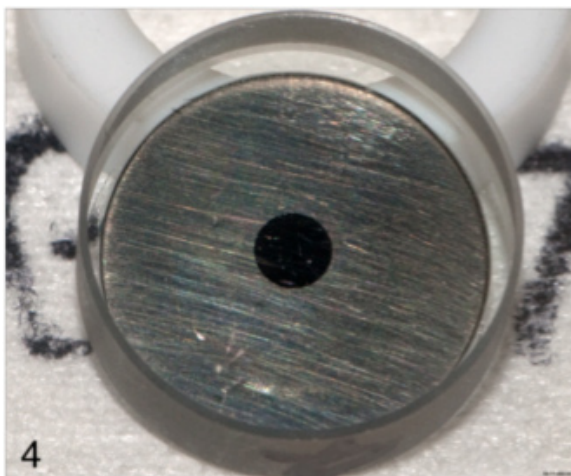
HEADS UP!

Plutonium experiments conducted at Sandia's Z Accelerator Facility

Los Alamos and Sandia National Laboratories successfully conducted the first plutonium isentropic (constant entropy) compression experiments on the refurbished Z machine. The experiment is a continuation of studies performed at Sandia prior to the major refurbishment of the Z machine, which increased its pulsed power output. The Z machine concentrates electrical energy and converts it into short pulses of controlled magnetic pressure, which create conditions on a small scale similar to those experienced by matter with the detonation of nuclear weapons. This capability is extremely useful in the study of weapons effects. This experiment marks the first in a collaborative series of dynamic properties experiments on plutonium being planned for the Z machine during FY11.

Scientists gave significant development effort into producing defect-free target materials because α -plutonium has a monoclinic crystal structure and has undergone seven phase transformations totaling more than 25 percent in volume contraction upon casting. These experiments represent significant accomplishments, such as exceeding the tolerances in materials production

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(Left): α -plutonium target mounted to a LiF window. Each experiment requires four samples in the shape of disks that are 15 millimeter in diameter to be lapped parallel and flat to within ± 2 micrometers. (Right): Drive window bounded above and below by two α -Pu targets/windows mounted into the fixture.

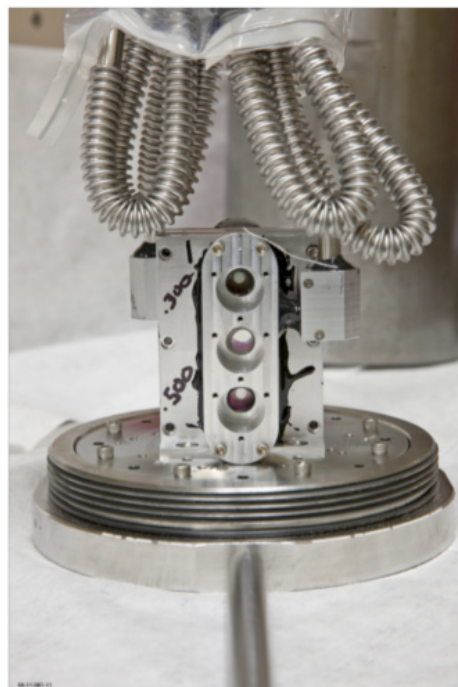


Photo credit: Mick Greenbank (Records Management/Media Services and Operations, IRM-RMMSO).

Let me start by wishing everyone a Happy New Year! I hope you all had a great break and are coming back feeling renewed and reenergized. Relating to the break, we were all saddened to learn of the tragedy that befell Jack Kennison, our MPA colleague, with the unexpected passing of his wife. Our thoughts and prayers are with Jack and his family.

When Wendy asked me author this month's "From the Desk" I initially wanted to tell all of you about some exciting new developments in MST-7 relating to some new people and new programmatic opportunities that have recently come into the group. But upon further reflection, I decided to address a topic that affects everyone in the Division, namely how we are trying to improve the performance management process within MST.

There has been a lot of frustration expressed through the years by both employees and managers regarding the Laboratory performance appraisal process. The Laboratory performance management system is similar to that used by most major corporations and is widely known as "management by objectives" (MBO). Unfortunately, this has commonly been interpreted as "objective management," which is not the same thing (the former is real, the latter imaginary, but more on that later). Trying to improve MST MBO implementation was one of the focus areas of last year's MST management retreat and Deniece Korzekwa and I "volunteered" to address this problem. Our goal was to try and strengthen within MST four behavioral principles that are universally associated with successful MBO implementations.

These are:

Principle of Participation: Motivation increases with employee participation in decision making and objective setting.

Principle of Feedback: Motivation increases when employees know where they stand.

Principle of Reciprocated Interest: Motivation increases when pursuit of organizational objectives is accompanied by achievement of personal objectives.

Principle of Recognition: Motivation to achieve organizational objectives increases when employee contributions are recognized.

What we devised (with a lot of help from others), we have labeled "employee development worksheets" (EDWs). EDWs are essentially a compilation of achievements that have been recognized as furthering MST goals and objectives. The descriptors can vary by job category but are



'The primary intended use of employee development worksheets is as a tool that team leaders and team members can use to enhance communication regarding work achievement goals, impacts, and performance summaries.'

level independent. Another distinguishing feature of EDWs from previous attempts to characterize staff achievements is their greater level of specificity. They cover funding, publications, internal and external recognition, programmatic responsibilities, and safety, security, and compliance areas. The primary intended use of EDWs is as a tool that team leaders and team members can use to enhance communication regarding work achievement goals, impacts, and performance summaries. If we use EDWs to bolster the principles discussed above, then they will be useful. If we view EDWs as a universal, prescriptive tool for scoring the performance process "objectively," then they will not be useful. This is because the full impact of achievements can only be perceived within the context of their relative benefits to the overall organization, which drives the ranking process. Every performance assessment process inherently has this "subjective" component, which many people here find disconcerting because they choose to equate "subjective" with "unfair." To put this in the proper context, think about the peer-review process that almost all of us have experienced in getting a technical manuscript published or proposal funded. The process is clearly subjective. Is it unfair? It can be, but the general consensus is that it is still the best system we have for the unbiased evaluation of technical contributions.

So then, how do EDWs fit within this subjective/objective scoring dichotomy? The way to score EDWs in a useful way is as a test for bias in our subjective "measurements." For example, team leaders can use EDWs to "test" their team member rankings and group leaders can test that equivalent contributions from members of different teams are valued equally. And because we "own" the EDWs, we can provide continuity to our performance management

process that can moderate the negative impact of dramatic changes that will likely continue to plague the HR-driven performance assessment process, which we all must follow.

In conclusion, there is no "magic bullet" that will fix everyone's dissatisfaction with the performance management process. Nevertheless, I'm asking all of you to give the EDWs a fair chance. You will be receiving them shortly. Please read through them carefully, discuss them with your team leaders, suggest improvements and, of course, feel free to provide feedback to myself and Deniece. With your help, we can choose a more "principled" approach to make the performance management process in MST work better for all of us. Thanks for your attention.

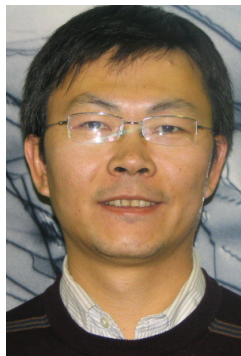
MST-7 Group Leader Ross Muenchausen

Plutonium... and sample fabrication of monoclinic α -phase plutonium and fully containing the dispersible plutonium resulting from extremes in Z machine energy production. The work met a technically and logistically challenging deliverable of high visibility, and the test resulted in the observation of some unexpected behavior of unalloyed plutonium. These results highlight the significant impact of processing and chemistry on plutonium physics properties and performance. The experiments mark a significant milestone for the NNSA Dynamic Materials Properties Campaign (Rick Martineau, LANL Program Manager). Los Alamos participants include Franz Freibert, James Gallegos, Mike Ramos, Joe Romero, and Deniece Korzekwa (Nuclear Materials Science Group, MST-16); and Paulo Rigg (Shock and Detonation Physics, WX-9).

Technical contact: Franz Freibert

Postdoctoral researcher recognized for poster at Los Alamos Postdoc Research Day

Xian-Ming Bai (Structure/Property Relations/Physics and Chemistry of Materials, MST-8/T-1) was recognized with an honorable mention for his poster, "Efficient Annealing of Radiation Damage via Interstitial Emission," at the recent Los Alamos Postdoc Research Day.



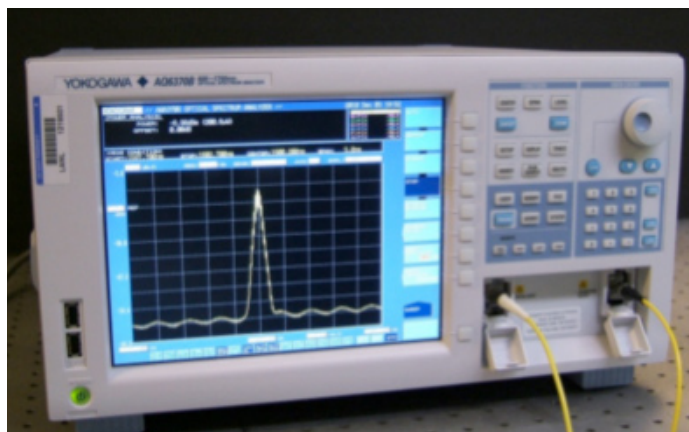
The Laboratory-wide event provided postdoctoral researchers the opportunity to present a summary of their Los Alamos research, receive feedback, and enhance collaboration and technical discussions among postdoctoral researchers and staff. The Los Alamos Postdoc Association and the Postdoc Program Office co-sponsored the event.

New fiber optic laboratory capability established

Team leader Markus Hehlen (Polymers and Coatings, MST-7) led a group of Los Alamos scientists to establish a fiber optic laboratory that provides the framework for developing fiber-based optical sensors, amplifiers, and lasers. The framework addresses needs in remote sensing, scientific instrumentation, metrology, chemical process control, chemical and biological detection, and a range of homeland security applications.

The laboratory offers its services to the broader Laboratory community. It features a high-performance optical spectrum analyzer capable of measuring near-infrared optical powers down to

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(Top): High-performance optical spectrum analyzer used for the characterization of fiber-optic components and devices in the 600-1700 nm wavelength range. (Center): Fusion of a variety of single and multimode silica optical fibers. The device performs an automated alignment of the cores of the two optical fiber ends and then fires an arc to melt and fuse the glass. This process produces a rugged and ultralow loss (<0.02 dB) optical connection. (Bottom): Class 100 clean room used for the preparation of cleaved fiber endfaces and the assembly of optical sensor components.

Fiber optic ... picowatt levels with 0.02 nanometer resolution, a core-alignment fiber fusion splicer, high-power sources at 1.3 and 1.5 micron wavelengths, a C-band fiber-optic amplifier, low-noise balanced photo-detectors, and technical staff with extensive fiber-optic device prototyping expertise. A Class 100 clean room is available for the preparation of cleaved fiber endfaces and the assembly of optical sensor devices. Computational tools for the design of optical thin-film filters (Macleod software) as well as calculations of absorption properties of complex gas mixtures enhance the experimental capability. The team has established collaborations with several coating companies that specialize in the deposition of custom optical multi-layer interference filters, which are an integral part of many fiber sensor devices.

Two current research projects illustrate the laboratory's range of capabilities. One is the development of an optical hydrogen fluoride sensor that uses fiber-coupled super-luminescent indium phosphide light-emitting diodes in conjunction with indium gallium arsenide balanced photo-diodes. This novel sensor allows the measurement of low part-per-million-level hydrofluoric gas concentrations in a compact, portable device suited for industrial settings. A University of California Office of the President grant funds the research. Another project, OPTIS, features the development of an integrated ultrafast optical pressure and temperature sensor that can quantify shock waves in explosives in situ for the first time. The Department of Defense/Department of Energy Joint Munitions Project supports the work.

Hehlen established the laboratory with support from Bryan Henson and Laura Smilowitz (Physical Chemical and Applied Spectroscopy, C-PCS), and Gary Parker, David Oschwald, Blaine Asay, and Timothy Foley (Explosive Applications and Spectroscopy Applications, WX-6).

Technical contact: Markus Hehlen

MST e-NEWS

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EPS Communications, at 606-1822, or kkippen@lanl.gov.



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Celebrating service

Congratulations to the following MST Division employees celebrating service anniversaries this month:

Doug Farr, MST-16	35 years
Rusty Gray, MST-8	25 years
Ruth Ann Vargas, MST-6	15 years

HeadsUP!

Online escorting log

A new online escorting log is now available for use in any Laboratory area with a badge reader, including Property Protection Areas. It is suggested that escorts use the online escorting log or use Access Log Form 1988 to record escort activities for their organizations. To access the online escorting log, visit int.lanl.gov/security/escort/log/

The online escorting log, which complies with Department of Energy directives, allows:

- only qualified escorts to enter visits on the log;
- escorts to indicate the date and time, technical area, building, and room location for visits; and
- escorts to modify entries in case there is a change in plans.

In addition, entries to the log will trigger an email notification to the host.

Validation

The online escort log is tied to the LANL training and clearance databases. The log will validate escorts' clearance levels and whether the escorts' training records (course number 18366) are current.

Escorts should note that the online escort log cannot validate the background of uncleared visitors (e.g., eligibility to be escorted, citizenship, etc.). Escorts must ensure they verify visitors' escortability.

Escorting reminders

In addition to being qualified, escorts must indicate on the log that they will brief visitors about:

- 1) controlled and prohibited articles prior to entry into the area;
- 2) emergency procedures (e.g., muster areas); and
- 3) any facility-specific requirements.

Important: If the escort log is inaccessible online due to a server or computer problem, the facility owner or responsible line manager for the area may use the Access Log Form 1988.

Resources

- Escorting Help Desk, escortinfo@lanl.gov
- Security Help Desk, 665-2002, security@lanl.gov

For more information, please see the Security Smart at int.lanl.gov/security/documents/security-smart/2010/escortlog1210.pdf